Radboud Repository

Radboud University Nijmegen

PDF hosted at the Radboud Repository of the Radboud University Nijmegen

The following full text is a publisher's version.

For additional information about this publication click this link.
http://hdl.handle.net/2066/25666

Please be advised that this information was generated on 2017-12-05 and may be subject to change.

Do general practitioner attitudes and characteristics of their practices explain patterns of specialist referral?

Martin Roland, Jeremy Grimshaw, Richard Grol, David Shanks, Anthony Johnson, Ian Russell, Ross Taylor

Objectives: To describe attitudes of general practitioners to their work, and to relate these to characteristics of their practices and to rates of specialist referral.
Methods: Data were collected from 109 Scottish general practitioners. Questionnaires were used to measure doctors perceptions of their responsibilities, their tolerance of uncertainty, their perception of benefits resulting from specialist referral, and perception of the incidence of a range of conditions which might require specialist referral. Rates of specialist referral were measured prospectively over a one-year period.
Results: There was wide variation in the responses to all questionnaires. More developed practices (e.g. computerised, with access to hospital beds) reported a greater sense of responsibility for the care of their own patients, and perceived less benefit from specialist referral. Doctors who perceived serious disease as relatively uncommon and those who saw themselves as responsible for a wide range of conditions referred fewer patients to specialists. Doctors working in practices which conducted regular audits and those who had access to hospital beds also referred fewer patients to specialists.
Conclusions: Attitudes of general practitioners to their roles, and the types of practice in which they work, are related to their use of hospital specialists. If, as in the UK at present, general practitioners take an increasingly restricted view of their 'core responsibilities', this could increase the numbers of patients referred to specialists. However the results of this study are also consistent with the view that, given appropriate practice development, general practitioners could carry out a greater proportion of work which is currently referred to specialists.

Eur J Gen Pract 1997;3:143-7.

Martin Roland, director of research and development.
National Primary Care Research and Development Centre, 5th Floor, Williamson Building, University of Manchester, Oxford Road, Manchester M13 6PL, United Kingdom.
Jeremy Grimshaw, programme director.
Health Services Research Unit, University of Aberdeen, Department of General Practice, Forsterhill Health Centre, Aberdeen AB9 2A4, United Kingdom.
Richard Grol, professor of general practice.
University of Nijmegen, PO Box 9101, 6500 HB Nijmegen, the Netherlands.
David Shanks, reader in experimental psychology.
University College, Gower Street, London WC1E 4BT, United Kingdom.
Anthony Johnson, medical statistician.
MRC Biostatistics Unit, Forvie Site, Cambridge CB2 2SR, United Kingdom.
Ian Russell, professor of health sciences.
University of York, Department of Health Sciences, Heslington, York YO1 5DD, United Kingdom.
Ross Taylor, senior lecturer in general practice.
University of Aberdeen, Department of General Practice, Forsterhill Health Centre, Aberdeen AB9 2A4, United Kingdom.

Correspondence to: Professor M Roland.
Submitted: 11th March 1997; accepted in revised form: 8th October 1997.

Introduction

There is wide variation in the rates at which individual general practitioners refer patients to specialists. Although some of this variation is due to chance,[1] previous research suggests that some of the variation in individual doctors' referral behaviour may be related to their work satisfaction,[2] their willingness to take risks,[3] their individual clinical skills,[4,5] their response to pressure from patients,[6] and the context in which the referral decision is made.[7-9] In most studies it has not been possible to explain more than a modest proportion of the variation in terms of characteristics of the doctors, their practices, or their patients.[10,11]

In many countries, it is policy to move a greater proportion of care from the secondary sector to primary care. The success of such moves may depend on the willingness of general practitioners to take on new roles. In the UK, increasing movement of care from secondary to primary sectors has led to conflict between general practitioners and the government about the tasks which should be carried out in general practice. The attitudes of general practitioners to their roles and responsibilities is an important factor which will need to be taken into account. Better understanding of these attitudes will help to improve the organisation of care at the interface between primary and secondary care.

Table 1. Perceived extent of general practitioners' responsibility* (figures are % of 109 doctors).

	Extent to which task is the responsibility of the GP				
	5 (Not at all)	4	3	2	1 (Totally)
Insertion of an intra-uterine device	1	3	12	28	57
Diagnosis and treatment of varicose ulcers	3	5	13	57	23
Diagnosis and treatment of duodenal ulcer	2	2	25	61	11
Evaluation of pulmonary function using peak flow and spirometry	1	7	21	44	27
Diagnosis and treatment of nocturnal enuresis in a six-year-old child	1	2	28	57	12
Management of chronic depression	0	4	34	54	8
Fundoscopy	2	12	29	41	16
Use of dithranol for psoriasis	4	8	33	44	11
Treatment of vaginal prolapse with a pessary	6	13	30	34	17
Wedge resection of an ingrowing toenail	8	13	31	24	24
Diagnosis and treatment of alcohol addiction	2	13	39	40	6
Interpretation of an ECG	5	20	46	26	4
Aspiration of knee effusion	13	28	30	24	6
Treatment of insulin dependent diabetes in adults	7	37	42	13	1
Diagnosis and treatment of hyperthyroidism	11	31	40	14	5
Assessment of hearing loss in an eight-year-old	14	39	30	13	5
Intra-partum care	24	27	30	14	6
Intra-ocular pressure measurement	37	32	21	9	1

* The rows in tables 1,2 and 3 are ordered to demonstrate the approximate frequency with which responses were given, not the order of the statements in the original questionnaires. These are available from the authors.

The aim of this study was to describe three sets of general practitioners' attitudes and beliefs about their work, and

assurance initiative.[17] This study required the accurate identification of specialist referrals across all conditions for

to describe the relationship of these attitudes to practice characteristics and to their use of specialist services. The first attitude measured was the general practitioners' perception about which tasks were truly the GP's responsibility. Views on this are known to vary both within and between European countries:[12,13] the debate about what are appropriate tasks for general practitioners to carry out is a key part of the development of general practice in Europe. Secondly, we examined the general practitioners' tolerance of uncertainty and their perceptions of how commonly a range of serious diseases occur. Management decisions in general practice are often taken under conditions of uncertainty[14,15] and response to uncertainty may influence both patterns of referral[3] and investigation.[16] Differences in the ways in which generalists and specialists react to uncertainty, and how this is influenced by their perception of the risk of missing serious illness forms an important part of the training of young doctors as generalists. Third, we included a measure of the benefit that they believe results from specialist referral. A doctor's decision to refer is based both on his own assessment of the problem, and on external influences such as pressure from the patient.[6] We hypothesised that the doctor's own view on the benefit to be gained from referring a variety of conditions might explain differences in patterns of referral.

Methods

This research was undertaken as part of a study of referrals for four tracer conditions (back pain, varicose veins, menorrhagia and dyspepsia) which was part of a quality a sample of general practitioners in Grampian, a geographical region in the North East of Scotland. It therefore offered the opportunity to study referral behaviour in general, as an addition to the original study aims.

Regionwide surveillance of referral letters over a 15-month period in 1990/91 captured 92% of NHS referrals without systematic bias.[18,19] General practitioners referring more than two patients with tracer conditions during the first four months of data collection were eligible for the main study, and were also asked to complete the questionnaires reported in this paper. In the UK, each general practitioner provides care for a defined 'list' of patients, so for all doctors, we calculated rates of referral based on total number of referrals during the period and the average list size in each practice. In addition, for 51 (47%) doctors, data were available on the actual number of consultations carried out by each doctor during the study period: for these doctors we also calculated a rate of referral based on their workload, i.e. the number of consultations carried out.

Data collected about general practitioners included their age, previous hospital appointments, qualifications, clinical interests, outside appointments, and medical committee membership. Details were also collected of practices, including numbers of partners, attached staff, access to services, responsibility for hospital beds or accident and emergency care, and involvement of the practice in teaching, training, audit, research, and developing clinical protocols.

GPs' perception of their responsibilities was measured using the questionnaire shown in table 1. This was derived

Table 2. Perceived benefit from referral (figures are % of 109 doctors).

	No benefit	Little benefit	Some considerable benefit	Considerable benefit	Very great benefit
18-year-old with an undisplaced fractured clavicle	32	47	16	2	4
Low back pain in a 25-year-old woman	6	64	25	4	1
18-year-old with migraine unresponsive to clonidine	8	41	39	12	0
50-year-old woman with panic attacks	7	27	46	17	4
30-year-old man with recurrent ulcer type dyspepsia	5	28	43	24	0
8-year-old child with enuresis	3	24	53	19	1
Varicose veins with early varicose eczema	6	15	43	30	6
Menorrhagia in a 35-year-old woman	3	15	49	33	1
Psoriasis where dithranol has been tried at low strenght	2	13	49	33	4
6-year-old child with bilateral hearing loss of 40dB for 4 months	0	1	17	58	24
40-year-old woman with carpal tunnel syndrome	0	1	16	58	26

Table 3. Perceived incidence of serious disease (figures are % of 109 doctors).

	Average GP sees new presentation once every:					
	month or more often	3 months	6 months	1 year	3 years	5 years or less often
Asthma	41	43	15	1	0	0
Glue ear	25	49	23	4	0	0
Myocardial infarction	12	52	30	6	0	0
Childhood urinary infection	13	48	25	13	2	0
Appendicitis	1	19	39	34	6	11
Carcinoma of the breast	0	7	34	47	12	0
Chronic simple glaucoma	0	3	30	40	22	5
Myxoedema	0	6	30	40	21	2
Rheumatoid arthritis	0	8	21	39	27	5
Malignant melanoma	0	0	1	14	33	52
Multiple sclerosis	0	0	0	17	40	43

from a questionnaire used previously with Dutch[12] and British[13] general practitioners. The questionnaire used to measure tolerance of uncertainty was one which had been used on Dutch, British and Belgian general practitioners,[3] with the addition of two questions relating to specialist referral (appendix). This questionnaire was interpreted by its authors as measuring the extent to which doctors were prepared to take risks in the face of clinical uncertainty.

To measure perceived benefits from hospital referral, a questionnaire was developed which asked how much benefit the GP thought would result from referral of 12 conditions to hospital. The conditions and scale are shown in table 2. To estimate the perceived incidence of conditions which might require hospital referral, GPs were asked how frequently they thought an average general practitioner would encounter the 11 conditions shown in table 3.
Conditions chosen ranged from common to very rare, and were ones which might be expected to result in specialist referral.

Statistical methods
Scores on individual items on each questionnaire were summed to give an overall score. The summed scores for the scales were all approximately normally distributed. Analysis of variance was initially used to compare the mean scores of psychological variables, entering doctor and practice characteristics as factors in the analysis or as covariates for continuous variables.
Stepwise multiple linear regression was used to relate doctor and practice characteristics to number of referrals made. We used the number of referrals made as the dependent variable in each regression analysis,[20] with denominators (list size or number of consultations) as independent variables in the regression equation. The psychological and practice characteristics were introduced as additional independent variables. Cumulative probability plots of studentised residuals were inspected to check the assumptions of normality in the regression analyses. The abbreviation 'CI' refers to the 95% confidence interval.

Results

One hundred and eighteen general practitioners (36% of all Grampian general practitioners) referred more than two patients with tracer conditions during the first four months of the study and were eligible for further study. In total, 114 (97%) doctors agreed to participate and were sent the attitude questionnaires, 109 (92%) of which were returned.

Table 4. Multiple regression analysis: associations of GP and practice characteristics with numbers of patients referred.

I. Denominator=workload (n=51)			
Variable	Regression coefficient	Standard error	Significance level
Number of consultations	0.084	0.023	0.007
Practice has access to hospital beds	42.54	16.6	0.014
Perceived incidence of serious disease	-16.5	7.7	0.036
Adjusted multiple r^2=0.37			
II. Denominator=list size (n=104)			
Variable	Regression coefficient	Standard error	Significance level
Perceived incidence of serious disease	-4.8	1.5	0.0016
Regular clinical audits	54.8	17.7	0.0025
Extent of GPs=responsibilities	3.5	1.2	0.0049
Adjusted multiple r^2=0.20			

Appendix
Questionnaire to measure tolerance of uncertainty.
(Statements 1-5 from Grol et al[3])

Respondents recorded agreement/disagreement with the following statements on a five-point scale:

- When in doubt it is preferable to refer to a specialist than to wait and see.
- A GP must not take any risks with physical illness.
- As far as physical complaints are concerned, a GP should do everything possible to find out the cause of the complaint.
- A GP must prefer the certain to the uncertain.
- As a GP, you must always be aware that each complaint can be the start of a serious illness.
- GPs should be more prepared than other doctors to be uncertain about a diagnosis.
- In general practice, treatment often has to start without a clear diagnosis.

Items were scored 1 (strongly agree) to 5 (strongly disagree), except items 6 and 7 which were scored in the reverse direction.

Referral data were available for 104 (88%) doctors.

I. Extent of general practitioners' responsibility

The responses to this questionnaire are shown in table 1. Doctors believed that they should have a wider range of responsibilities if they came from practices having responsibility for hospital beds (mean score 45.9 (beds), 50.8 (no beds), CI of difference=1.4-8.4, p=0.001), or if they worked in computerised practices (mean score 48.3 (computerised), 56.2 (not computerised), CI of difference=1.9-13.9, p=0.004).

II. Tolerance of uncertainty

Using scores on the tolerance of uncertainty scale in the appendix, trainers were more tolerant of uncertainty (mean score trainers: 24.1, non trainers: 21.1, CI of difference 2.3-3.7, p=0.017), as were doctors who saw smaller numbers of patients each week (p=0.002).

III. Perceived benefits from specialist referral

The responses to this questionnaire are shown in table 2. Doctors in computerised practices perceived less benefit from referral (mean score computerised: 36.6, not computerised 40.5, CI of difference=0.5-7.3, p=0.009).

IV. Perceived incidence of serious illness

The responses to this questionnaire are shown in table 3. There were no significant relationships between responses to these questionnaires and any of the available doctor or practice characteristics.

V. Associations with rates of referral

Rates of referral varied from 61 to 344 referrals per 1000 patients per year, and for those 51 general practitioners where workload data were collected, from 1.6 to 7.8 referrals per 100 consultations. In the multiple regression analysis, there were significant associations between numbers of patients referred, two of the questionnaire scores and two practice characteristics.

With workload as a factor in the multiple regression analysis (available for less than half the sample), numbers of referrals were significantly related to the number of consultations, to the practice having responsibility for hospital beds, and to the perceived incidence of serious disease (table 4). The proportion of variance in numbers of patients referred (adjusted multiple r2) was 0.24 for the number of consultations alone: this increased to 0.37 with the addition of the practice- and doctor-related variables. Rates of referral were 3.5 referrals/100 consultations in practices with access to beds (37% of practices in this predominantly rural area) and 4.2 referrals/100 consultations in those without access to beds. The unadjusted mean scores on the perceived incidence of serious illness scale for doctors with referral rates in the top and bottom quartiles were 36.6 and 39.9.

In the analysis using list size as the denominator, doctors who perceived serious illness as relatively uncommon had lower rates of referral to hospital, as did doctors who saw themselves responsible for a wider range of conditions, and those working in practices which carried out regular clinical audit (table 4). The unadjusted mean scores on the perceived responsibility scale for doctors with referral rates in the top and bottom quartiles were 50.9 and 47.5. Unad-

elements to consider in general practice training and continuing education.

In terms of perceived responsibilities, doctors showed similar variability in their wide-ranging responses to questions about their own roles, when compared with English and Dutch studies.[12,13] In the UK, there are moves to transfer a substantial amount of care from the secondary to the primary sector. This has met with increasing resistance from general practitioners to accept this new work. The present study data were collected in 1990 and 1991, after introduction of the new GP contract, but before the more recent accelerated shift of care from secondary to primary care. The results therefore reflect relatively traditional GP values, which may have changed as a result of recent changes in the health service. Doctors in this study who took a broad view of their responsibilities referred fewer patients to hospital. If these results are generalisable to other parts of Europe, then a broadening of GP attitudes about their core responsibilities may decrease the number of patients referred to specialists.

Two practice characteristics explained a significant amount of variation in referral behaviour. The first was regular clinical audit. Audit itself was commoner in more developed practices (e.g. training practices and those using protocols). The lower rate of referral found in these practices may relate to a generally critical clinical environment in the practice rather than to specific audit projects. Practices which had access to community hospital beds also referred fewer patients to specialists (having taken account of specialist

Scottish Office Home and Health Department. The research was supported by the Medical Research Council and a Wellcome Training Fellowship in Health Services Research (JMG). The authors are responsible for the contents of the paper.

References

1 Moore AT, Roland MO. How much of the variation in general practitioner referral rates is due to chance? *Br Med J* 1989;**298**:500-2.
2 Grol R, Mokkink H, Smits A, Beek M, Mesker P, Mesker-Neisten J, et al. Work satisfaction of general practitioners and quality of patient care. *Fam Pract* 1985;**2**:128-35.
3 Grol R, Whitfield M, Maeseneer J De, Mokkink H. Attitudes to risk taking in medical decision making among British, Dutch and Belgian general practitioners. *Br J Gen Pract* 1990;**40**:134-6.
4 Reynolds GA, Chitnis JG, Roland MO. General practitioner outpatient referrals: do good doctors refer more patients to hospital. *Br Med J* 1991;**302**:1250-1.
5 Marco De, Dain C, Lockwood T, Roland M. How valuable is feedback of information on hospital referral patterns? Lessons from visits to 92 East Anglian practices. *Br Med J* 1993;**307**:1465-6.
6 Armstrong D, Fry J, Armstrong P. Doctors' perceptions of pressure from patients for referral. *Br Med J* 1991;**302**:1186-8.
7 Newton J, Hayes V, Hutchinson A. Factors influencing general practitioners' referral decisions. *Fam Pract* 1991;**8**:308-13.
8 King N, Bailey J, Newton P. Analysing general practitioners' referral decisions. I. Developing an analytical framework. *Fam Pract* 1994;**11**:3-8.
9 Bailey J, King N, Newton P. Analysing general practitioners' referral decisions. II. Applying the analytical framework: Do high and low referrers differ in factors influencing their referral decisions? *Fam Pract* 1994;**11**:9-14.

(References continued on page 151)

justed mean rates of referral for practices with and without regular audit were 131 and 149 referrals/1000 patients/year respectively. Regular audit was more commonly reported in training practices (p=0.002, Fishers exact test), and in practices which reported using clinical protocols (χ_1^2= 22.1, p<0.001).

Discussion

We have shown relationships between rates of referral and a number of characteristics of practices and general practitioners. We obtained somewhat different results using workload and list size as denominators for rates of referral. We believe that the former is the better approach to the analysis of referral data, as workload and casemix may vary between general practitioners in ways which are not reflected in the registered practice list size.[21] However, since workload data were available for less than half the sample, we have presented both analyses.

Doctors who perceived serious disease as occurring relatively infrequently also referred fewer patients to hospital. This was the only characteristic significantly related to numbers of patients referred in both approaches to the multiple regression analysis. Doctors are known to be relatively unsophisticated at incorporating information on risk and probability into their clinical judgements.[22,23] It was not possible in this study to relate the judgements the doctors made to actual disease incidence in their locality. Nevertheless, the wide variation in estimates suggests that an understanding of risk and probability might be important clinics carried out in community hospitals). Data collected in the study did not enable us to explain this finding, and there are a number of possible explanations. It may have been, for example, that these doctors had access to a wider range of investigations, or that familiarity with inpatient care may have given them a broader range of skills, or fostered an attitude of self-reliance. Equally, even though general practitioners with access to beds referred fewer patients to specialists, it does not follow that their care was necessarily more cost-effective.

In the analyses reported in this paper, it has been possible to identify a small number of characteristics of GPs and their practices which explain a significant proportion of the variation in numbers of patients referred to specialists. The results support a significant role of doctors' behaviour and beliefs in determining patterns of referral. If general practitioners take an increasingly restricted view of their 'core responsibilities' as is the case in the UK at present, this could increase the numbers of patients referred to specialists. However the results of this study are also consistent with the view that, given appropriate practice development, general practitioners could carry out a greater proportion of work which is currently referred to specialists. ■

Acknowledgements

The National Primary Care Research and Development Centre is funded by the Department of Health. The Health Services Research Unit in Aberdeen is funded by the Chief Scientist Office,